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IN REPLY
REFER TO DSCC-VAS 1 September 2004

MEMORANDUM FOR MILITARY/INDUSTRY DISTRIBUTION

SUBJECT: Initial Draft of MIL-M-38510/8E; Project Number 5962-2078

The initial draft for the subject document, dated 1 September 2004, is now available for viewing and downloading from the DSCC-VA Web site:

http://www.dscc.dla.mil/Programs/MilSpec/DocSearch.asp

Major changes to this document include updating it to current MIL-STD-961 requirements, deleting burn in and life test circuits, and changing the requirements to align with MIL-PRF-38535. In addition, the propagation delay time, t_{PHL}, for device type 03 and 04, has been changed in table I and table III at the request of the device supplier.

Concurrence or comments are required at this Center within 45 days from the date of this letter. Late comments will be held for the next coordination of the document. Comments from military departments must be identified as either "Essential" or "Suggested". Essential comments must be justified with supporting data. Military review activities should forward comments to their custodians of this office, as applicable, in sufficient time to allow for consolidating the department reply.

The point of contact for this document is Mr. Greg Pitz, Defense Supply Center Columbus, DSCC-VAS, Post Office Box 3990, Columbus, OH 43218-3990. Mr. Greg Pitz can also be reached at 614-692-0535/850-0535, or by facsimile 614-692-6939/850-6939, or by e-mail to: greg.pitz@dla.mil.

\Signed\
Raymond Monnin
Chief
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cc:
VQC
VSS

NOTE: This draft, dated 1 September 2004 prepared by the Defense Supply Center Columbus (DSCC-VAS) has not been approved and is subject to modification. DO NOT USE PRIOR TO APPROVAL.

MIL-M-38510/8E
draft_____
SUPERSEDING
MIL-M-38510/8D
28 June 1985

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, BIPOLAR, TTL, BUFFERS/DRIVERS OPEN COLLECTOR OUTPUT, HIGH VOLTAGE, MONOLITHIC SILICON

Inactive for new design after 7 September 1995.

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product herein shall consist of this specification sheet and MIL-PRF 38535

1. SCOPE

1.1 Scope. This specification covers the detail requirements for monolithic, silicon, TTL, buffers/drivers microcircuits with open collector high voltage outputs. Two product assurance classes and a choice of case outlines and lead finishes are provided for each type and are reflected in the complete part number. *For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3)*.

1.2 Part *or Identifying* Number *(PIN)*. The *PIN* ~~shall be~~ is in accordance with ~~MIL-M-38510~~ *MIL-PRF-38535*, and as specified herein.

1.2.1 Device types. The device types ~~shall be~~ are as follows:

Device type	Circuit
01	Hex inverter buffer/driver, 30-volt output
02	Hex inverter buffer/driver, 15-volt output
03	Hex buffer/driver, 30-volt output
04	Hex buffer/driver, 15-volt output
05	Quad 2 input inverter buffer/driver, 15-volt output

1.2.2 Device class. The device class ~~shall be~~ is the product assurance level as defined in ~~MIL-M-38510~~ *MIL-PRF-38535*.

1.2.3 Case outlines. The case outlines ~~shall be~~ are as designated in ~~See MIL-M-38510, appendix C~~ *MIL-STD-1835* and as follows:

Outline letter	Descriptive designator	Terminals	Package style
A	~~F-1 (14-pin, ¼" x ¼"),~~ *GDFP5-F14 or CDFP6-F14*	14	Flat pack
B	~~F-3 (14-pin, ¼" x 3/16"),~~ *GDFP4-14*	14	Flat pack
C	~~D-1 (14-pin, ¼" x ¾"),~~ *GDIP1-T14 or CDIP2-T14*	14	Dual-in-line
D	~~F-2 (14-pin, ¼" x 3/8"),~~ *GDFP1-F14 or CDFP2-F14*	14	Flat pack

Comments, suggestions, or questions on this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAS, P. O. Box 3990, Columbus, OH 43218-3990, or emailed to bipolar@dscc.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at www.dodssp.daps.mil.

AMSC N/A FSC 5962

1.2.4 Absolute maximum ratings.

Supply voltage range	-0.5 V dc to +7.0 V dc
Input voltage range	-1.5 V dc at -12 mA to +5.5 V dc
Storage temperature range	-65°C to +150°C
Maximum power dissipation per gate, P_D 1/	54 mW dc per buffer
Lead temperature (soldering 10 seconds)	300°C
Thermal resistance, junction-to-case (θ_{JC})	*(See MIL-STD-1835)* ~~(See MIL-M-38510 apendix C)~~
Junction temperature (T_J) 2/	175°C

1.2 Recommended operating conditions.

Supply voltage (V_{CC})	4.5 V dc minimum to 5.5 V dc maximum
Minimum high level input voltage (V_{IH})	2.0 V dc
Maximum low level input voltage (V_{IL})	0.8 V dc
Normalized fanout (each output) 3/ :	
Device types 01, 02, 03, and 04	18 maximum
Device type 05	10 maximum
Case operating temperature range (T_C)	-55°C to 125°C

2.0 APPLICABLE DOCUMENT

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

~~MILITARY~~ DEPARTMENT OF DEFENSE SPECIFICATIONS

~~MIL-M-38510 - Microcircuits, General Specification for.~~
MIL-PRF-38535 - Integrated Circuits (Microcircuits) Manufacturing, General Specification for.

~~MILITARY~~ DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883 - Test Method Standard for Microelectronics.
MIL-STD-1835 - Interface Standard Electronic Component Case Outlines

(~~Copies of the specifications standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)~~ *(Copies of these documents are available online at* http://assist.daps.dla.mil/quicksearch/ *or www.dodssp.daps.mil or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)*

1/ Must withstand the added P_D due to short circuit condition (e.g. I_{OS}) at one output for 5 seconds duration.
2/ Maximum junction temperature should not be exceeded except in accordance with allowable short duration burn-in screening condition in accordance with MIL-PRF-38535.
3/ The device will fanout in both high and low levels to the specified number of inputs of the same device type as that being tested.

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this document takes precedence. *Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.*

3. REQUIREMENTS

3.1 Qualification. Microcircuits furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturers list before contract award (see 4.3 and 6.4).

3.2 Item requirements. ~~The individual item requirements shall be in accordance with MIL-M-38510, and as specified herein~~. *The individual item requirements shall be in accordance with MIL-PRF-38535 and as specified herein or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein*.

3.3 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in ~~MIL-M-38510~~ *MIL-PRF-38535* and herein.

3.3.1 Logic diagram and terminal connections. The logic diagram and terminal connections shall be as specified on figure 1.

3.3.2 Truth tables and logic equations. The truth tables and logic equations shall be as specified on figure 2.

3.3.3 Schematic circuits. The schematic circuits shall be ~~submitted to the preparing activity prior to inclusion of a manufacturer's device in the specification and shall be submitted to the qualifying activity and agent activity (DESC-ECS) as a prerequisite for qualification~~ *maintained by the manufacturer and made available to the qualifying activity and the preparing activity upon request*. ~~All qualified manufacturers schematics shall be maintained by the agent activity and will be available upon request~~.

3.3.4 Case outlines. Case outlines shall be as specified in 1.2.3.

3.4 Lead material and finish. Lead material and finish shall be in accordance with ~~MIL-M-38510~~ *MIL-PRF-38535* (see 6.6).

3.5 Electrical performance characteristics. The electrical performance characteristics are as specified in table 1 and apply over the full recommended case operating temperature range, unless otherwise specified.

3.6 Electrical test requirements. The electrical test requirements for each device class shall be the subgroups specified in table II. The electrical tests for each subgroup are described in table III.

3.7 Marking. Marking shall be in accordance with *MIL-PRF-38535* ~~MIL-M-38510.~~

3.8 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 2 (~~see MIL-M-38510, appendix E~~ *see MIL-PRF-38535, appendix A*).

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $-55°C \le T_C \le +125°C$ *unless otherwise specified*	Device type	Limits		
				Min	Max	Unit
High-level output voltage	V_{OH}	1/	01, 03	30		V
			02, 04, 05	15		
Input clamp voltage	V_{IC}	V_{CC} = 4.5 V, I_{IN} = -12 mA, T_A = 25° C	All		-1.5	V
Maximum collector cut-off current	I_{CEX}	V_{CC} = 4.5 V, V_{OH} = MAX 4/	All		250	µA
Low-level output voltage	V_{OL1}	V_{CC} = 4.5 V, I_{OL} = 30 mA, 4/	01, 02 03, 04		0.7	V
Low-level output voltage	V_{OL2}	V_{CC} = 4.5 V, I_{OL} = 16 mA, 4/	All		0.4	V
High-level input current	I_{IH1}	V_{CC} = 5.5 V, V_{IN} = 2.4 V 2/	All		40	µA
High-level input current	I_{IH2}	V_{CC} = 5.5 V, V_{IN} = 5.5 V 2/	All		100	µA
Low-level input current	I_{IL1}	V_{CC} = 5.5 V, V_{IN} = 0.4 V 3/	01, 02 03, 04	-0.4	-1.6	mA
			05	-0.7	-1.6	
High-level supply current	I_{CCH}	V_{CC} = 5.5 V, V_{IN} = 0 V	01, 02		51	mA
		V_{CC} = 5.5 V, V_{IN} = 5.5 V	03, 04		46	mA
		V_{CC} = 5.5 V, V_{IN} = 0 V	05		8	mA
Low-level supply current	I_{CCL}	V_{CC} = 5.5 V, V_{IN} = 5.5 V	01, 02		48	mA
		V_{CC} = 5.5 V, V_{IN} = 0 V	03, 04		32	mA
		V_{CC} = 5.5 V, V_{IN} = 5.5 V	05		22	mA
Propagation delay time high-to-low level	t_{PHL}	C_L = 50 pF ±10% minimum, R_L = 150 Ω ±5 %	01, 02	3	30	ns
			03, 04	3	~~35~~ *38*	ns
		C_L = 50 pF ±10% minimum, R_L = 1 kΩ ±5 %	05	3	35	ns
Propagation delay time low-to-high level	t_{PLH}	C_L = 50 pF ±10% minimum, R_L = 150 Ω ±5 %	01, 02	3	25	ns
			03, 04	3	20	ns
		C_L = 50 pF ±10% minimum, R_L = 1 kΩ ±5 %	05	3	40	ns

1/ See I_{CEX}.
2/ All unspecified inputs grounded.
3/ All unspecified input at 5.5 volts.
4/ V_{IL} = 0.7 V at 125°C only as follows:
I_{CEX}: device types 01, 02, 05.
V_{OL1}, V_{OL2}: device types 03 and 04.

TABLE II. Electrical test requirements.

~~MIL-STD-883~~ *MIL-PRF-38535* Test requirement	Subgroups (see table III)	
	Class S Devices	Class B Devices
Interim electrical parameters ~~(Pre Burn-In) (method 5004)~~	1	1
Final electrical test parameters ~~(method 5004)~~	1*, 2, 3, 9, 10, 11	1*, 2, 3, 9
Group A test requirements ~~(Method 5005)~~	1, 2, 3, 9, 10, 11	1, 2, 3 9, 10, 11
Group B electrical test parameters when using the method 5005 QCI option	*1, 2, 3, 9, 10, 11*	N/A
Groups C end point electrical parameters ~~(method 5005)~~	1, 2, 3 *9, 10, 11*	1, 2, 3
Group D end point electrical parameters ~~(method 5005)~~	1, 2, 3	1, 2, 3

*PDA applies to subgroup 1 (see 4.3c.).

4. ~~PRODUCT ASSURANCE PROVISIONS~~ *VERIFICATION*

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with ~~MIL-M-38510 and method 5005 of MIL-STD-883, except as modified herein.~~ *MIL-PRF-38535 or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not effect the form, fit, or function as described herein*.

4.2 Qualification inspection. Qualification inspection shall be in accordance with ~~MIL-M-38510~~ *MIL-PRF-38535* ~~and 4.3.1 and 4.3.2 herein. Inspections to be performed shall be those specified in method 5005 of MIL-STD-883 and herein for groups A, B, C, and D inspections (see 4.4.1 through 4.4.5).~~

4.2 Screening. Screening shall be in accordance with ~~method 5004 of MIL-STD-883~~, *MIL-PRF-38535* and shall be conducted on all devices prior to qualification and ~~quality~~ conformance inspection. The following additional criteria shall apply:

~~a. Burn-in test (method 1015 of MIL-STD-883).~~
~~(1) Test condition D or E, using the circuit shown on figure four, or equivalent.~~
~~(2) T_A = +125°C minimum.~~

a. The burn-in test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.

b. Interim and final electrical test parameters shall be as specified in table II, except interim electrical parameters test prior to burn-in is optional at the discretion of the manufacturer.

~~c. The percent defective allowable (PDA) shall be as specified in MIL-M-38510.~~
c. *Additional screening for space level product shall be as specified in MIL-PRF-38535*.

4.3 Qualification inspection. Qualification inspection shall be in accordance with ~~MIL-M-38510~~ *MIL-PRF-38535* ~~and 4.3.1 and 4.3.2 herein. Inspections to be performed shall be those specified in method 5005 of MIL-STD-883 and herein for groups A, B, C, and D inspections (see 4.4.1 through 4.4.5).~~

4.4.1 Group A inspection. Group A inspection shall be in accordance with ~~table I of method 5005 of MIL-STD-883~~ *table III of MIL-PRF-38535* and as follows:

a. Tests shall be as specified in table II herein.
b. Subgroups 4, 5, 6, 7, and 8 shall be omitted.

4.4.2 Group B inspection. Group B inspection shall be in accordance with table II of ~~method 5005 of MIL-STD-883~~ *MIL-PRF-38535*.

4.4.3 Group C inspection. Group C inspection shall be in accordance with ~~table III of method 5005 of MIL-STD-883~~ *table IV of MIL-PRF-38535* and as follows:

a. End point electrical parameters shall be as specified in table II herein.
~~c. Operating life test (method 1005 of MIL-STD-883) conditions:~~
b. The steady-state life test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1005 of MIL-STD-883.

~~(1) Test condition D or E, using the circuit shown on figure four, or equivalent.~~
~~(2) T_A = 125°C, minimum.~~
~~(3) Test duration: 1,000 hours, except as permitted by appendix B of MIL-M-38510.~~

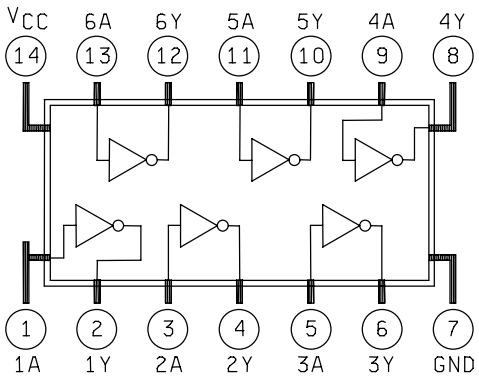
4.4.4 Group D inspection. Group D inspection shall be in accordance with ~~table IV of method 5005 of MIL-STD-883~~ *table V of MIL-PRF-38535*. End-point electrical parameters shall be as specified in table II herein.

4.5 Methods ~~of examination and test~~ inspection. Methods of ~~examination and test~~ inspection shall be as specified in the appropriate tables and as follows:

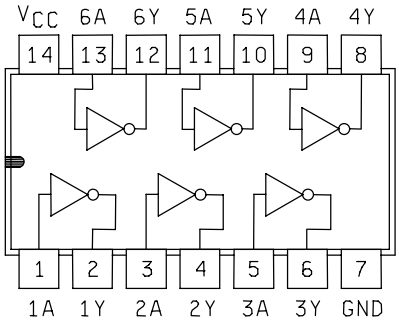
4.5.1 Voltage and current. All voltages given are referenced to the microcircuit ground terminal. Currents given are conventional current and positive when flowing into the referenced terminal.

DEVICE TYPES 01 AND 02

CASES A,B, AND D

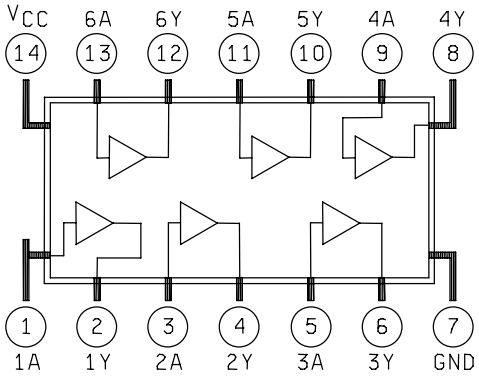


CASE C

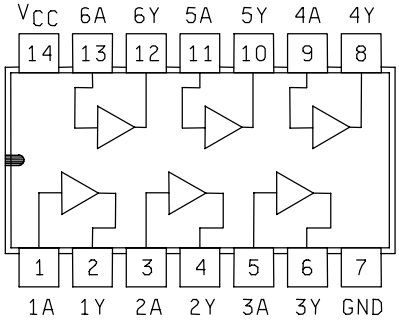


DEVICE TYPES 03 AND 04

CASES A,B, AND D

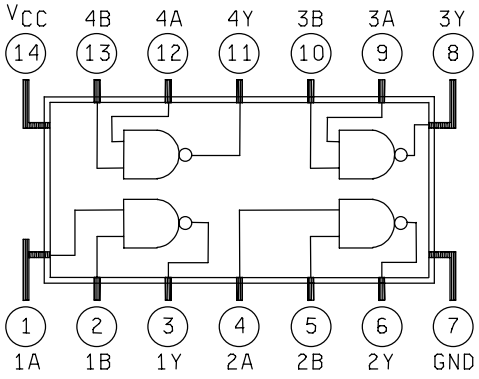


CASE C



DEVICE TYPE 05

CASES A,B, AND D



CASE C

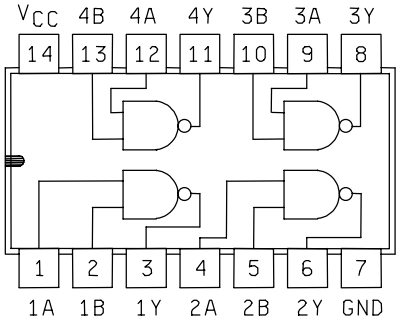


Figure 1. Logic diagram and terminal connections (top views).

Device types 01 and 02

Truth table each gate	
Input	Output
A	Y
L	H
H	L

Positive logic Y = $\overline{A}$

Device type 03 and 04

Truth table each gate	
Input	Output
A	Y
L	L
H	H

Positive logic Y = A

Device type 05

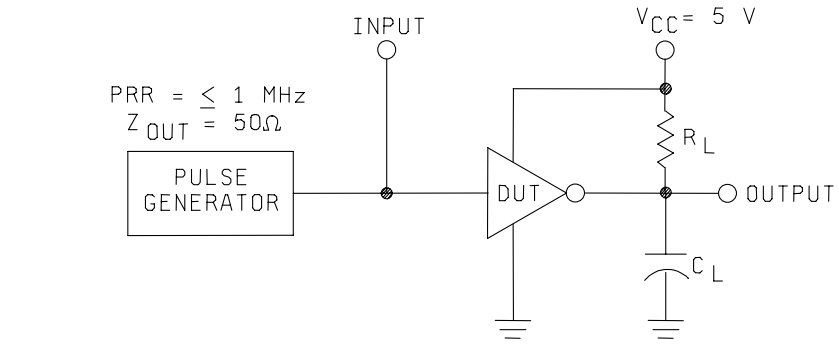
Truth table each gate		
Input		Output
A	B	Y
L	L	H
H	L	H
L	H	H
H	H	L

Positive logic Y = $\overline{AB}$

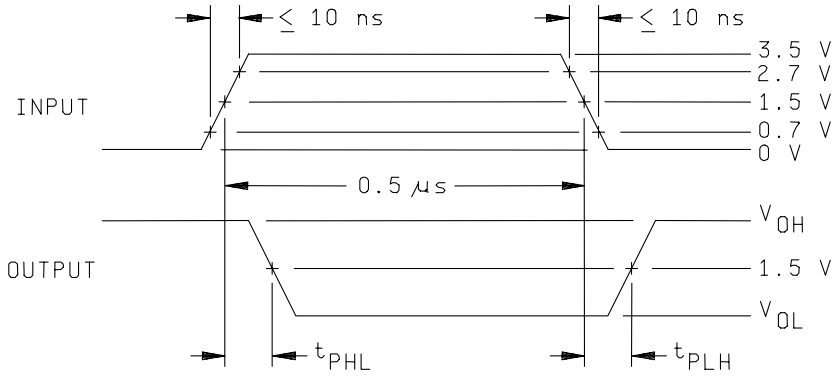
Figure 2. Truth tables and logic equations.

BURN-IN AND LIFE TEST CIRCUITS HAVE BEEN DELETED

FIGURE X. Burn-in and life test circuit.



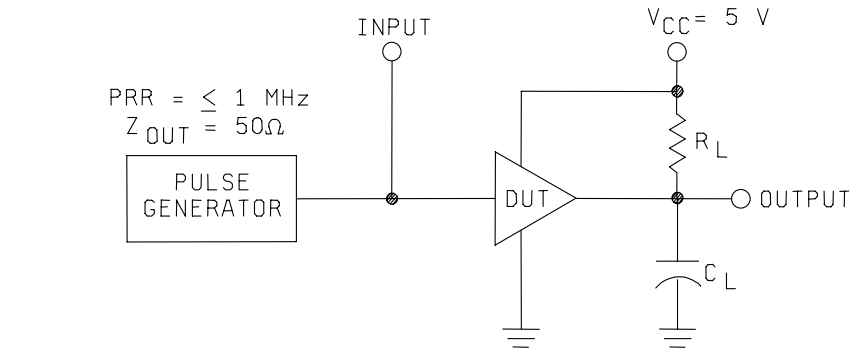
TEST CIRCUIT



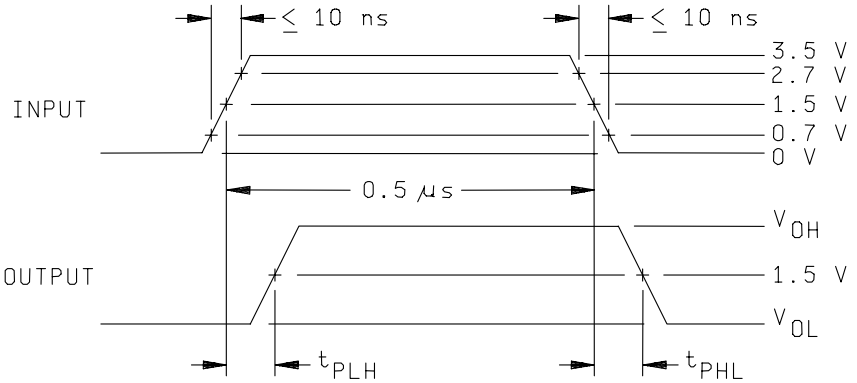
VOLTAGE WAVEFORMS

NOTES:
1. C_L = 50 pF ± 10% minimum including scope probe, wiring, and stray capacitance, without package in test fixture.
2. Voltage measurements are to be made with respect to network ground terminal.
3. R_L = 150 Ω ± 5%.

FIGURE 3. Switching time test circuit for device types 01 and 02.



TEST CIRCUIT

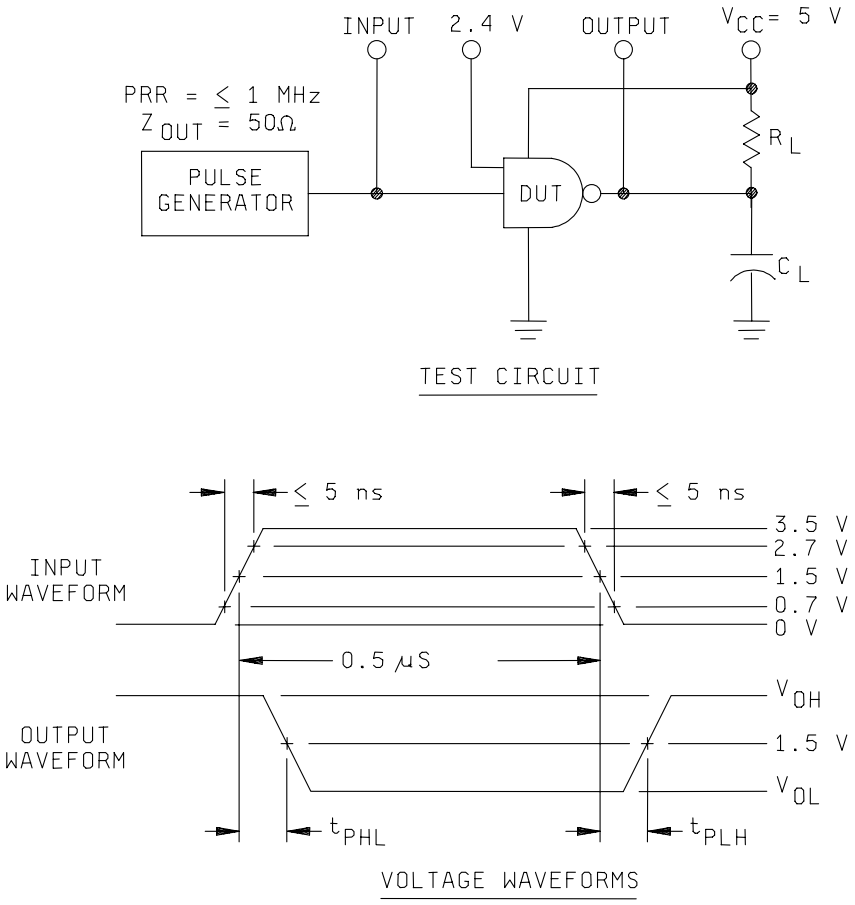


VOLTAGE WAVEFORMS

NOTES:

1. C_L = 50 pF ± 10% minimum including scope probe, wiring, and stray capacitance, without package in test fixture.
2. Voltage measurements are to be made with respect to network ground terminal.
3. R_L = 150 Ω ± 5%.

FIGURE 4. Switching time test circuit for device types 03 and 04.



NOTES:

1. C_L = 50 pF ± 10% minimum including scope probe, wiring, and stray capacitance, without package in test fixture.
2. Voltage measurements are to be made with respect to network ground terminal.
3. R_L = 1 kΩ ± 5%.

FIGURE 5. Switching time test circuits for device type 05.

TABLE III. Group A inspection for device type 01 and 02.
Terminal conditions (High ≥ 2.0 V or Low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Meas. terminal	Test limits		
			Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	Unit
			Test No.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V_{CC}				
1	V_{OL1}	3007	1	2.0 V	30 mA	5.5 V		5.5 V		GND		5.5 V		5.5 V		5.5 V	4.5 V	1Y		0.7	V
T_C = +25°C	"	"	2	5.5 V		2.0 V	30 mA	5.5 V		"		"		"		"	"	2Y		"	"
"	"	"	3	"		5.5 V		2.0 V	30 mA	"		"		"		"	"	3Y		"	"
"	"	"	4	"		"		5.5 V		"	30 mA	2.0 V		"		"	"	4Y		"	"
"	"	"	5	"		"		"		"		5.5 V	30 mA	2.0 V		"	"	5Y		"	"
"	"	"	6	"		"		"		"		"		5.5 V	30 mA	2.0 V	"	6Y		"	"
"	V_{OL2}	"	7	2.0 V	16 mA	"		"		"		"		"		5.5 V	"	1Y		0.4	"
"	"	"	8	5.5 V		2.0 V	16 mA	"		"		"		"		"	"	2Y		"	"
"	"	"	9	"		5.5 V		2.0 V	16 mA	"		"		"		"	"	3Y		"	"
"	"	"	10	"		"		5.5 V		"	16 mA	2.0 V		"		"	"	4Y		"	"
"	"	"	11	"		"		"		"		5.5 V	16 mA	2.0 V		"	"	5Y		"	"
"	"	"	12	"		"		"		"		"		5.5 V	16 mA	2.0 V	"	6Y		"	"
"	I_{CEX}		13	0.8 V	A	"		"		"		"		"		5.5 V	"	1Y		250	µA
"	"		14	5.5 V		0.8 V	A	"		"		"		"		"	"	2Y		"	"
"	"		15	"		5.5 V		0.8 V	A	"		"		"		"	"	3Y		"	"
"	"		16	"		"		5.5 V		"	A	0.8 V		"		"	"	4Y		"	"
"	"		17	"		"		"		"		5.5 V	A	0.8 V		"	"	5Y		"	"
"	"		18	"		"		"		"		5.5 V		5.5 V	A	0.8 V	"	6Y		"	"
"	V_{IC}		19	-12 mA						"							"	1A		-1.5	V
"	"		20			-12 mA				"							"	2A		"	"
"	"		21					-12 mA		"							"	3A		"	"
"	"		22							"		-12 mA					"	4A		"	"
"	"		23							"				-12 mA			"	5A		"	"
"	"		24							"						-12 mA	"	6A		"	"
"	I_{IH1}	3010	25	2.4 V		GND		GND		"		GND		GND		GND	5.5 V	1A		40	µA
"	"	"	26	GND		2.4 V		GND		"		"		"		"	"	2A		"	"
"	"	"	27	"		GND		2.4 V		"		"		"		"	"	3A		"	"
"	"	"	28	"		"		GND		"		2.4 V		"		"	"	4A		"	"
"	"	"	29	"		"		"		"		GND		2.4 V		"	"	5A		"	"
"	"	"	30	"		"		"		"		"		GND		2.4 V	"	6A		"	"
"	I_{IH2}	3010	31	5.5 V		"		"		"		"		"		GND	"	1A		100	"
"	"	"	32	GND		5.5 V		"		"		"		"		"	"	2A		"	"
"	"	"	33	"		GND		5.5 V		"		"		"		"	"	3A		"	"
"	"	"	34	"		"		GND		"		5.5 V		"		"	"	4A		"	"
"	"	"	35	"		"		"		"		GND		5.5 V		"	"	5A		"	"
"	"	"	36	"		"		"		"		GND		GND		5.5 V	"	6A		"	"

Note: A = 30 volts for device type 01 and 15 volts for device type 02.

TABLE III. Group A inspection for device type 01 and 02. - Continued
Terminal conditions (High ≥ 2.0 V or Low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Meas. terminal	Test limits		
			Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	Unit
			Test No.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V_{CC}				
1	I_{IL}	3009	37 CKT A, C	0.4 V		5.5 V		5.5 V		GND		5.5 V		5.5 V		5.5 V	5.5 V	1A	-.7	-1.6	mA
T_C = +25°C	"	"	37 CKT B	0.4 V		5.5 V		"		"		"		"		"	"	1A	-.4	-1.3	"
"	"	"	38 CKT A, C	5.5 V		0.4 V		"		"		"		"		"	"	2A	-.7	-1.6	"
"	"	"	38 CKT B	"		0.4 V		"		"		"		"		"	"	2A	-.4	-1.3	"
"	"	"	39 CKT A, C	"		5.5 V		0.4 V		"		"		"		"	"	3A	-.7	-1.6	"
"	"	"	39 CKT B	"		"		0.4 V		"		"		"		"	"	3A	-.4	-1.3	"
"		"	40 CKT A, C	"		"		5.5 V		"		0.4 V		"		"	"	4A	-.7	-1.6	"
"	"	"	40 CKT B	"		"		"		"		0.4 V		"		"	"	4A	-.4	-1.3	"
"	"	"	41 CKT A, C	"		"		"		"		5.5 V		0.4 V		"	"	5A	-.7	-1.6	"
"	"	"	41 CKT B	"		"		"		"		"		0.4 V		"	"	5A	-.4	-1.3	"
"	"	"	42 CKT A, C	"		"		"		"		"		5.5 V		0.4 V	"	6A	-.7	-1.6	"
"	"	"	42 CKT B	"		"		"		"		"		"		0.4 V	"	6A	-.4	-1.3	"
"	I_{CCL}	3005	43 CKT A	"		"		"		"		"		"		5.5 V	"	V_{CC}		41	"
"	"	"	43 CKT B	"		"		"		"		"		"		"	"	"		48	"
"	"	"	43 CKT C	"		"		"		"		"		"		"	"	"		44	"
"	I_{CCH}	"	44 CKT A	GND		GND		GND		"		GND		GND		GND	"	"		42	"
"	"	"	44 CKT B	"		"		"		"		"		"		"	"	"		51	"
"	"	"	44 CKT C	"		"		"		"		"		"		"	"	"		48	"
2	Same tests, terminal conditions and limits as for subgroup 1, except T_C = 125° C and V_{IC} tests are omitted. V_{IL} = 0.7 V for I_{CEX}.																				
3	Same tests, terminal conditions and limits as for subgroup 1, except T_C = -55° C and V_{IC} tests are omitted.																				
9	t_{PHL}	3003	45	IN	OUT					GND							5.0 V	1A to 1Y	3	25	ns
T_C = +25°C	"	(Fig 3)	46			IN	OUT			"							"	2A to 2Y	"	"	"
"	"	"	47					IN	OUT	"							"	3A to 3Y	"	"	"
"	"	"	48							"	OUT	IN					"	4A to 4Y	"	"	"
"	"	"	49							"			OUT	IN			"	5A to 5Y	"	"	"
"	"	"	50							"					OUT	IN	"	6A to 6Y	"	"	"
"	t_{PLH}	"	51	IN	OUT					"							"	1A to 1Y	"	20	"
"	"	"	52			IN	OUT			"							"	2A to 2Y	"	"	"
"	"	"	53					IN	OUT	"							"	3A to 3Y	"	"	"
"	"	"	54							"	OUT	IN					"	4A to 4Y	"	"	"
"	"	"	55							"			OUT	IN			"	5A to 5Y	"	"	"
"	"	"	56							"					OUT	IN	"	6A to 6Y	"	"	"

TABLE III. Group A inspection for device type 01 and 02. - Continued
Terminal conditions (High ≥ 2.0 V or Low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Meas. terminal	Test limits		
			Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	Unit
			Test No.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V_{CC}				
10	t_{PHL}	3003	57	IN	OUT					GND							5.0 V	1A to 1Y	3	30	ns
T_C = +125°C	"	(Fig 3)	58			IN	OUT			"							"	2A to 2Y	"	"	"
"	"	"	59					IN	OUT	"							"	3A to 3Y	"	"	"
"	"	"	60							"	OUT	IN					"	4A to 4Y	"	"	"
"	"	"	61							"			OUT	IN			"	5A to 5Y	"	"	"
"	"	"	62							"					OUT	IN	"	6A to 6Y	"	"	"
"	t_{PLH}	"	63	IN	OUT					"							"	1A to 1Y	"	25	"
"	"	"	64			IN	OUT			"							"	2A to 2Y	"	"	"
"	"	"	65					IN	OUT	"							"	3A to 3Y	"	"	"
"	"	"	66							"	OUT	IN					"	4A to 4Y	"	"	"
"	"	"	67							"			OUT	IN			"	5A to 5Y	"	"	"
"	"	"	68							"					OUT	IN	"	6A to 6Y	"	"	"
11	Same tests, terminal conditions and limits as for subgroup 10, except T_C = -55°C.																				

TABLE III. Group A inspection for device type 03 and 04.
Terminal conditions (High ≥ 2.0 V or Low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Meas. terminal	Test limits		
			Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	Unit
			Test No.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V_{CC}				
1	V_{OL1}	3007	1	0.8 V	30 mA	5.5 V		5.5 V		GND		5.5 V		5.5 V		5.5 V	4.5 V	1Y		0.7	V
T_C = +25°C	"	"	2	5.5 V		0.8 V	30 mA	5.5 V		"		"		"		"	"	2Y		"	"
"	"	"	3	"		5.5 V		0.8 V	30 mA	"		"		"		"	"	3Y		"	"
"	"	"	4	"		"		5.5 V		"	30 mA	0.8 V		"		"	"	4Y		"	"
"	"	"	5	"		"		"		"		5.5 V	30 mA	0.8 V		"	"	5Y		"	"
"	"	"	6	"		"		"		"		"		5.5 V	30 mA	0.8 V	"	6Y		"	"
"	V_{OL2}	"	7	0.8 V	16 mA	"		"		"		"		"		5.5 V	"	1Y		0.4	"
"	"	"	8	5.5 V		0.8 V	16 mA	"		"		"		"		"	"	2Y		"	"
"	"	"	9	"		5.5 V		0.8 V	16 mA	"		"		"		"	"	3Y		"	"
"	"	"	10	"		"		5.5 V		"	16 mA	0.8 V		"		"	"	4Y		"	"
"	"	"	11	"		"		"		"		5.5 V	16 mA	0.8 V		"	"	5Y		"	"
"	"	"	12	"		"		"		"		"		5.5 V	16 mA	0.8 V	"	6Y		"	"
"	I_{CEX}		13	2.0 V	A	"		"		"		"		"		5.5 V	"	1Y		250	µA
"	"		14	5.5 V		2.0 V	A	"		"		"		"		"	"	2Y		"	"
"	"		15	"		5.5 V		2.0 V	A	"		"		"		"	"	3Y		"	"
"	"		16	"		"		5.5 V		"	A	2.0 V		"		"	"	4Y		"	"
"	"		17	"		"		"		"		5.5 V	A	2.0 V		"	"	5Y		"	"
"	"		18	"		"		"		"		5.5 V		5.5 V	A	2.0 V	"	6Y		"	"
"	V_{IC}		19	-12 mA						"							"	1A		-1.5	V
"	"		20			-12 mA				"							"	2A		"	"
"	"		21					-12 mA		"							"	3A		"	"
"	"		22							"		-12 mA					"	4A		"	"
"	"		23							"				-12 mA			"	5A		"	"
"	"		24							"						-12 mA	"	6A		"	"
"	I_{IH1}	3010	25	2.4 V		GND		GND		"		GND		GND		GND	5.5 V	1A		40	µA
"	"	"	26	GND		2.4 V		GND		"		"		"		"	"	2A		"	"
"	"	"	27	"		GND		2.4 V		"		"		"		"	"	3A		"	"
"	"	"	28	"		"		GND		"		2.4 V		"		"	"	4A		"	"
"	"	"	29	"		"		"		"		GND		2.4 V		"	"	5A		"	"
"	"	"	30	"		"		"		"		"		GND		2.4 V	"	6A		"	"
"	I_{IH2}	3010	31	5.5 V		"		"		"		"		"		GND	"	1A		100	"
"	"	"	32	GND		5.5 V		"		"		"		"		"	"	2A		"	"
"	"	"	33	"		GND		5.5 V		"		"		"		"	"	3A		"	"
"	"	"	34	"		"		GND		"		5.5 V		"		"	"	4A		"	"
"	"	"	35	"		"		"		"		GND		5.5 V		"	"	5A		"	"
"	"	"	36	"		"		"		"		GND		GND		5.5 V	"	6A		"	"

Note: A = 30 volts for device type 03 and 15 for device type 04.

TABLE III. Group A inspection for device type 03 and 04. - Continued
Terminal conditions (High ≥ 2.0 V or Low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Meas. terminal	Test limits		
			Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	Unit
			Test No.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V_{CC}				
1	I_{IL}	3009	37 CKT A, C	0.4 V		5.5 V		5.5 V		GND		5.5 V		5.5 V		5.5 V	5.5 V	1A	-.7	-1.6	mA
T_C = +25°C	"	"	37 CKT B	0.4 V		5.5 V		"		"		"		"		"	"	1A	-.4	-1.3	"
"	"	"	38 CKT A, C	5.5 V		0.4 V		"		"		"		"		"	"	2A	-.7	-1.6	"
"	"	"	38 CKT B	"		0.4 V		"		"		"		"		"	"	2A	-.4	-1.3	"
"	"	"	39 CKT A, C	"		5.5 V		0.4 V		"		"		"		"	"	3A	-.7	-1.6	"
"	"	"	39 CKT B	"		"		0.4 V		"		"		"		"	"	3A	-.4	-1.3	"
"	"	"	40 CKT A, C	"		"		5.5 V		"		0.4 V		"		"	"	4A	-.7	-1.6	"
"	"	"	40 CKT B	"		"		"		"		0.4 V		"		"	"	4A	-.4	-1.3	"
"	"	"	41 CKT A, C	"		"		"		"		5.5 V		0.4 V		"	"	5A	-.7	-1.6	"
"	"	"	41 CKT B	"		"		"		"		"		0.4 V		"	"	5A	-.4	-1.3	"
"	"	"	42 CKT A, C	"		"		"		"		"		5.5 V		0.4 V	"	6A	-.7	-1.6	
"	"	"	42 CKT B	"		"		"		"		"		"		0.4 V	"	6A	-.4	-1.3	"
"	I_{CCL}	3005	43 CKT A, B	"		"		"		"		"		"		5.5 V	"	V_{CC}		42	"
"	I_{CCL}	"	43 CKT C	"		"		"		"		"		"		5.5 V	"	"		46	"
"	I_{CCH}	"	44 CKT A, B	GND		GND		GND		"		GND		GND		GND	"	"		30	"
"	I_{CCH}	"	44 CKT C	GND		GND		GND		"		GND		GND		GND	"	"		32	"
2	Same tests, terminal conditions and limits as for subgroup 1, except T_C = 125° C and V_{IC} tests are omitted. V_{IL} = 0.7 V for V_{OL1} and V_{OL2}.																				
3	Same tests, terminal conditions and limits as for subgroup 1, except T_C = -55° C and V_{IC} tests are omitted.																				
9	t_{PHL}	3003	45	IN	OUT					GND							5.0 V	1A to 1Y	3	~~26~~ *28.5*	ns
T_C = +25°C	"	(Fig 4)	46			IN	OUT			"							"	2A to 2Y	"	"	"
"	"	"	47					IN	OUT	"							"	3A to 3Y	"	"	"
"	"	"	48							"	OUT	IN					"	4A to 4Y	"	"	"
"	"	"	49							"			OUT	IN			"	5A to 5Y	"	"	"
"	"	"	50							"					OUT	IN	"	6A to 6Y	"	"	"
"	t_{PLH}	"	51	IN	OUT					"							"	1A to 1Y	"	15	"
"	"	"	52			IN	OUT			"							"	2A to 2Y	"	"	"
"	"	"	53					IN	OUT	"							"	3A to 3Y	"	"	"
"	"	"	54							"	OUT	IN					"	4A to 4Y	"	"	"
"	"	"	55							"			OUT	IN			"	5A to 5Y	"	"	"
"	"	"	56							"					OUT	IN	"	6A to 6Y	"	"	"

TABLE III. Group A inspection for device type 03 and 04. - Continued
Terminal conditions (High ≥ 2.0 V or Low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Meas. terminal	Test limits		
			Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	Unit
			Test No.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V_{CC}				
10	t_{PHL}	3003	57	IN	OUT					GND							5.0 V	1A to 1Y	3	~~35~~ *38*	ns
T_C = +125°C	"	(Fig 4)	58			IN	OUT			"							"	2A to 2Y	"	"	"
"	"	"	59					IN	OUT	"							"	3A to 3Y	"	"	"
"	"	"	60							"	OUT	IN					"	4A to 4Y	"	"	"
"	"	"	61							"			OUT	IN			"	5A to 5Y	"	"	"
"	"	"	62							"					OUT	IN	"	6A to 6Y	"	"	"
"	t_{PLH}	"	63	IN	OUT					"							"	1A to 1Y	"	20	"
"	"	"	64			IN	OUT			"							"	2A to 2Y	"	"	"
"	"	"	65					IN	OUT	"							"	3A to 3Y	"	"	"
"	"	"	66							"	OUT	IN					"	4A to 4Y	"	"	"
"	"	"	67							"			OUT	IN			"	5A to 5Y	"	"	"
"	"	"	68							"					OUT	IN	"	6A to 6Y	"	"	"
11	Same tests, terminal conditions and limits as for subgroup 10, except T_C = -55°C.																				

TABLE III. Group A inspection for device type 05.
Terminal conditions (High ≥ 2.0 V or Low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Meas. terminal	Test limits		
			Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	Unit
			Test No.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V_{CC}				
1	V_{OL2}	3007	1	2.0 V	2.0 V	16 mA	5.5 V	5.5 V		GND		5.5 V	5.5 V		5.5 V	5.5 V	4.5 V	1Y		0.4	V
T_C = +25°C	"	"	2	5.5 V	5.5 V		2.0 V	2.0 V	16 mA	"		5.5 V	5.5 V		"	"	"	2Y		"	"
"	"	"	3	"	"		5.5 V	5.5 V		"	16 mA	2.0 V	2.0 V		"	"	"	3Y		"	"
"	"	"	4	"	"		"	"		"		5.5 V	5.5 V	16 mA	2.0 V	2.0 V	"	4Y		"	"
"	I_{CEX}		5	0.8 V	2.0 V	15.0 V	"	"		"		"	"		5.5 V	5.5 V	"	1Y		250	µA
"	"		6	2.0 V	0.8 V	15.0 V	"	"		"		"	"		"	"	"	1Y		"	"
"	"		7	5.5 V	5.5 V		0.8 V	2.0 V	15.0 V	"		"	"		"	"	"	2Y		"	"
"	"		8	"	"		2.0 V	0.8 V	15.0 V	"		"	"		"	"	"	2Y		"	"
"	"		9	"	"		5.5 V	5.5 V		"	15.0 V	0.8 V	2.0 V		"	"	"	3Y		"	"
"	"		10	"	"		"	"		"	15.0 V	2.0 V	0.8 V		"	"	"	3Y		"	"
"	"		11	"	"		"	"		"		5.5 V	5.5 V	15.0 V	0.8 V	2.0 V	"	4Y		"	"
"	"		12	"	"		"	"		"		5.5 V	5.5 V	15.0 V	2.0 V	0.8 V	"	4Y		"	"
"	V_{IC}		13	-12 mA						"							"	1A		-1.5	V
"	"		14		-12 mA					"							"	1B		"	"
"	"		15				-12 mA			"							"	2A		"	"
"	"		16					-12 mA		"							"	2B		"	"
"	"		17							"		-12 mA					"	3A		"	"
"	"		18							"			-12 mA				"	3B		"	"
"	"		19							"					-12 mA		"	4A		"	"
"	"		20							"						-12 mA	"	4B		"	"
"	I_{IH1}	3010	21	2.4 V	GND		GND	GND		"		GND	GND		GND	GND	5.5 V	1A		40	µA
"	"	"	22	GND	2.4 V		GND	"		"		"	"		"	"	"	1B		"	"
"	"	"	23	"	GND		2.4 V	"		"		"	"		"	"	"	2A		"	"
"	"	"	24	"	"		GND	2.4 V		"		"	"		"	"	"	2B		"	"
"	"	"	25	"	"		"	GND		"		2.4 V	"		"	"	"	3A		"	"
"	"	"	26	"	"		"	"		"		GND	2.4 V		"	"	"	3B		"	"
"	"	"	27	"	"		"	"		"		"	GND		2.4 V	"	"	4A		"	"
"	"	"	28	"	"		"	"		"		"	"		GND	2.4 V	"	4B		"	"
"	I_{IH2}	3010	29	5.5 V	"		"	"		"		"	"		"	GND	"	1A		100	"
"	"	"	30	GND	5.5 V		"	"		"		"	"		"	"	"	1B		"	"
"	"	"	31	"	GND		5.5 V	"		"		"	"		"	"	"	2A		"	"
"	"	"	32	"	"		GND	5.5 V		"		"	"		"	"	"	2B		"	"
"	"	"	33	"	"		"	GND		"		5.5 V	"		"	"	"	3A		"	"
"	"	"	34	"	"		"	"		"		GND	5.5 V		"	"	"	3B		"	"
"	"	"	35	"	"		"	"		"		"	GND		5.5 V	"	"	4A		"	"
"	"	"	36	"	"		"	"		"		"	GND		GND	5.5 V	"	4B		"	"

TABLE III. Group A inspection for device type 05. - Continued
Terminal conditions (High ≥ 2.0 V or Low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Meas. terminal	Test limits		
			Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	Unit
			Test No.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V_{CC}				
1	I_{IL}	3009	37	0.4 V	5.5 V		5.5 V	5.5 V		GND		5.5 V	5.5 V		5.5 V	5.5 V	5.5 V	1A	-.7	-1.6	mA
T_C = +25°C	"	"	38	5.5 V	0.4 V		5.5 V	"		"		"	"		"	"	"	1B	"	"	"
"	"	"	39	"	5.5 V		0.4 V	"		"		"	"		"	"	"	2A	"	"	"
"	"	"	40	"	"		5.5 V	0.4 V		"		"	"		"	"	"	2B	"	"	"
"	"	"	41	"	"		"	5.5 V		"		0.4 V	"		"	"	"	3A	"	"	"
"	"	"	42	"	"		"	"		"		5.5 V	0.4 V		"	"	"	3B	"	"	"
"	"	"	43	"	"		"	"		"		"	5.5 V		0.4 V	"	"	4A	"	"	"
"	"	"	44	"	"		"	"		"		"	"		5.5 V	0.4 V	"	4B	"	"	"
"	I_{CCL}	3005	45	"	"		"	"		"		"	"		5.5 V	5.5 V	"	V_{CC}		22	"
"	I_{CCH}	3005	46	GND	GND		GND	GND		"		GND	GND		GND	GND	"	V_{CC}		8	"
2	Same tests, terminal conditions and limits as for subgroup 1, except T_C = 125° C and V_{IC} tests are omitted. V_{IL} = 0.7 V for I_{CEX}.																				
3	Same tests, terminal conditions and limits as for subgroup 1, except T_C = -55° C and V_{IC} tests are omitted.																				
9	t_{PHL}	3003	47	IN	2.4 V	OUT				GND							5.0 V	1A to 1Y	3	25	ns
T_C = +25°C	"	(Fig 5)	48				IN	2.4 V	OUT	"							"	2A to 2Y	"	"	"
"	"	"	49							"	OUT	IN	2.4 V				"	3A to 3Y	"	"	"
"	"	"	50							"				OUT	IN	2.4 V	"	4A to 4Y	"	"	"
"	t_{PLH}	"	51	IN	2.4 V	OUT				"							"	1A to 1Y	"	30	"
"	"	"	52				IN	2.4 V	OUT	"							"	2A to 2Y	"	"	"
"	"	"	53							"	OUT	IN	2.4 V				"	3A to 3Y	"	"	"
"	"	"	54							"				OUT	IN	2.4 V	"	4A to 4Y	"	"	"
10	t_{PHL}	"	55	IN	2.4 V	OUT				"							"	1A to 1Y	"	35	"
T_C = +125°C	"	"	56				IN	2.4 V	OUT	"							"	2A to 2Y	"	"	"
"	"	"	57							"	OUT	IN	2.4 V				"	3A to 3Y	"	"	"
"	"	"	58							"				OUT	IN	2.4 V	"	4A to 4Y	"	"	"
"	t_{PLH}	"	59	IN	2.4 V	OUT				"							"	1A to 1Y	"	40	"
"	"	"	60				IN	2.4 V	OUT	"							"	2A to 2Y	"	"	"
"	"	"	61							"	OUT	IN	2.4 V				"	3A to 3Y	"	"	"
"	"	"	62							"				OUT	IN	2.4 V	"	4A to 4Y	"	"	"
11	Same tests, terminal conditions and limits as for subgroup 10, except T_C = -55°C.																				

5. PACKAGING

~~5.1 Packaging requirements. Microcircuits shall be prepared for delivery in accordance with MIL-M-38510.~~

5.1 Packaging requirements. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military service's system command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

~~6.1 Notes. The notes specified in MIL-M-38510 are applicable to this specification.~~

~~6.2 Intended use. Microcircuits conforming to this specification are intended for use for Government microcircuit applications (original equipment) and logistic purposes.~~

6.1 Intended use. Microcircuits conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.

~~6.3 Ordering data. The contract should specify the following:~~

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of the specification.

b. ~~Complete part number~~ *PIN and compliance identifier, if applicable* (see 1.2).

c. Requirements for delivery of one copy of the ~~quality~~ conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.

d. Requirement for certificate of compliance, if applicable.

e. Requirements for notification of change of product or process to ~~contracting~~ *acquiring* activity in addition to notification to the qualifying activity, if applicable.

f. Requirements for failure analysis (including required test condition of method 5003), corrective action and reporting of results, if applicable.

g. Requirements for product assurance options.

h. Requirements for carriers, special lead lengths or lead forming, if applicable. These requirements shall not affect the part number. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.

i. Requirements for "JAN" marking.

j. Packaging requirements (see 5.1).

6.3 Superseding information. The requirements of MIL-M-38510 have been superseded to take advantage of the available Qualified Manufacturer Listing (QML) system provided by MIL-PRF-38535. Previous references to MIL-M-38510 in this document have been replaced by appropriate references to MIL-PRF-38535. All technical requirements now consist of this specification and MIL-PRF-38535. The MIL-M-38510 specification sheet number and PIN have been retained to avoid adversely impacting existing government logistics systems and contractor's parts lists.

6.4 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List QML-38535 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DSCC-VQ, 3990 E. Broad Street, Columbus, Ohio 43123-1199.

6.5 Abbreviations, symbols and definitions. The abbreviations, symbols, and definitions used herein are defined in ~~MIL-STD-1313~~ *MIL-PRF-38535* and MIL-STD-1331, and as follows:

GND ..... Ground zero voltage potential.
V_{IN} ..... Voltage level at an input terminal.
V_{IC} ..... Input clamp voltage.
I_{IN} ..... Current-flowing into an input terminal.

6.6 Logistic support. Lead materials and finishes (see 3.3) are interchangeable. Unless otherwise specified, microcircuits acquired for Government logistic support will be acquired to device class B (see 1.2.2), lead material and finish A (see 3.4). Longer lead lengths and lead forming shall not affect the part number.

~~6.6 Substitutability. Microcircuits covered by this specification will replace the following commercial device types:~~

6.7 Substitutability. The cross-reference information below is presented for the convenience of users. Microcircuits covered by this specification will functionally replace the listed generic-industry type. Generic-industry microcircuit types may not have equivalent operational performance characteristics across military temperature ranges or reliability factors equivalent to MIL-M-35810 device types and may have slight physical variations in relation to case size. The presence of this information should not be deemed as permitting substitution of generic-industry types for MIL-M-38510 types or as a waiver of any of the provisions of MIL-PRF-38535.

Device type	Commercial type
01	5406
02	5416
03	5407
04	5417
05	5426

6.8 Supersession information. MIL-M-38510/8E supersedes MIL-M-38510/8D. MIL-M-0038510/8C(19) was issued as an "in lieu of" document for MIL-M-38510/8B and was superseded by MIL-M-38510/8D.

6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

~~Custodians:~~
~~Army – ER~~
~~Navy – EC~~
~~Air Force – 17~~

~~Preparing activity:~~
~~Air Force – 17~~

~~Agent:~~
~~DLA – ES~~

~~Review activities:~~
~~Army – MI, AR~~
~~Air Force – 11, 19, 85, 99~~
~~Navy - OS, SH, TD~~
~~DLA – ES~~

~~(Project 5962-0809)~~

~~User activities:~~
~~Army – SM~~
~~Navy – CG, MC, AS~~

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

(Project 5962-2078)

Review activities:
Army - MI, SM
Navy - AS, CG, MC, SH, TD
Air Force - 03, 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at www.dodssp.daps.mil.